

1. Convert the following values INTO scientific notation using the normalized value (decimal place is to the right of the first non-zero digit).

- a. $5,600,000,000 = 5.6 \times 10^9$
- b. $4,900 = 4.9 \times 10^3$
- c. $35 = 3.5 \times 10^1$
- d. $1,200,000,000,000,000,000 = 1.2 \times 10^{18}$
- e. $0.005 = 5 \times 10^{-3}$
- f. $0.000,000,008,6 = 8.6 \times 10^{-9}$
- g. $0.623 = 6.23 \times 10^{-1}$

Prefix	Abbreviation	Value
peta	P	10^{15}
tera	T	10^{12}
giga	G	10^9
mega	M	10^6
kilo	k	10^3
hecto	h	10^2
deca	da	10^1
deci	d	10^{-1}
centi	c	10^{-2}
milli	m	10^{-3}
micro	μ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}
femto	f	10^{-15}

(7)

2. Convert the following into standard number format (remove the scientific notation).

- a. $4.5 \times 10^8 = 4,500,000,000$ 7
- b. $17.65 \times 10^{14} = 1,765,000,000,000,000.$ 12
- c. $2.6 \times 10^{-10} = 0.000,000,000,26$ 7 (7)
- d. $428.5 \times 10^{-6} = 0.0004285$
- e. $0.005 \times 10^9 = 5,000,000$ 6
- f. $114.5 \times 10^{14} = 11,450,000,000,000,000.$ 13
- g. $37,774.5 \times 10^{-13} = 0.000,000,000,377745$ 8

3. Complete the table with the missing information for each line (all base units are meters, m).

Standard Number	Scientific Notation	Number with Prefix on units
45 000 m	4.5×10^3 m	45 km
0.0000032 m 6	3.2×10^{-6} m	3.2 μ m
$5,000,000,000$ m 7	5×10^9 m	5 Gm
$0.000,000,007,8$ m	7.8×10^{-9} m	7.8 nm
$0.000,000,000,450$ 7	450×10^{-12} m	450 pm
$0.000,000,000,000,075$ 13	75×10^{-15} m 7.5×10^{-14}	75 fm
120.45	1.2045×10^2	1.2045 hm

(12)

4. Multiply the following together WITHOUT using a calculator, leave your answers in Scientific Notation.

- a. $(5,000,000,000) \times (2,000)$
 $= 5 \times 10^9 \times 2 \times 10^3$
 $= 10^1 \times 10^{12} =$
 $= 10^{13}$
- b. $(0.000,000,4) \times (0.000,003)$ (4)
 $= 4 \times 10^{-7} \times 3 \times 10^{-6} =$
 $= 12 \times 10^{-13}$
 $= 1.2 \times 10^1 \times 10^{-13}$
 $= 1.2 \times 10^{-12}$

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